No. 8900278

THE UNITED STATES OF AMERICA

TO ALL TO WHOM THESE PRESENTS SHALL COME:

Northrup King Co.

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED NOVEL VARIETY OF SEXUALLY REPRODUCED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF eighteen YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, IMPORTING IT, OR EXPORTING IT, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT TY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

ALFALFA

'Crockett'

In Testimony Whereof, *I have hereunto set my hand and caused the seal of the* Plant Variety Protection Office *to be affixed at the City of* Washington, D. C. *this* 31st *day of* July *in the year of our Lord one thousand nine hundred and ninety.*

Attest:

Kenneth B. Evans
Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

Clayton Yeutter
Secretary of Agriculture

FORM APPROVED: OMB 0581-0055, Expires 1/31/91

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE

(Instructions on reverse)

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF APPLICANT(S) *(as it is to appear on the Certificate)*
Northrup King Co.

2. TEMPORARY DESIGNATION OR EXPERIMENTAL NO.
84634

3. VARIETY NAME
Crockett

4. ADDRESS *(street and no. or R.F.D. no., city, state, and ZIP)*
P.O. Box 959
Minneapolis, MN 55440

5. PHONE *(Include area code)*
612-593-7333

FOR OFFICIAL USE ONLY

PVPO NUMBER
8900278

FILING Date: July 27, 1989
Time: 1:30 ☐ A.M. ☑ P.M.

FEES RECEIVED
Filing and Examination Fee: $2150.-
Date: July 27, 1989
Certificate Fee: $250.00
Date: July 16, 1990

6. GENUS AND SPECIES NAME
Medicago sativa

7. FAMILY NAME *(Botanical)*
Leguminosae

8. CROP KIND NAME *(Common Name)*
Alfalfa

9. DATE OF DETERMINATION
November 1988

10. IF THE APPLICANT NAMED IS NOT A "PERSON," GIVE FORM OF ORGANIZATION *(Corporation, partnership, association, etc.)*
Corporation

11. IF INCORPORATED, GIVE STATE OF INCORPORATION
Delaware

12. DATE OF INCORPORATION
1976

13. NAME AND ADDRESS OF APPLICANT REPRESENTATIVE(S), IF ANY, TO SERVE IN THIS APPLICATION AND RECEIVE ALL PAPERS
Dr. Robert W. Romig
Northrup King Co.
P. O. Box 959
Minneapolis, MN 55440

PHONE *(Include area code)*: 612-593-7305

14. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED *(Follow INSTRUCTIONS on reverse)*

a. ☒ Exhibit A, Origin and Breeding History of the Variety.
b. ☒ Exhibit B, Novelty Statement.
c. ☒ Exhibit C, Objective Description of Variety.
d. ☐ Exhibit D, Additional Description of Variety.
e. ☒ Exhibit E, Statement of the Basis of Applicant's Ownership.
f. ☒ Seed Sample (2,500 viable untreated seeds). Date Seed Sample mailed to Plant Variety Protection Office _____.
g. ☒ Filing and Examination Fee ($2,150) made payable to "Treasurer of the United States."

15. DOES THE APPLICANT(S) SPECIFY THAT SEED OF THIS VARIETY BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED? *(See section 83(a) of the Plant Variety Protection Act.)*
☐ YES *(If "YES," answer items 16 and 17 below)* ☒ NO *(If "NO," skip to item 18 below)*

16. DOES THE APPLICANT(S) SPECIFY THAT THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS?
☐ YES ☐ NO

17. IF "YES" TO ITEM 16, WHICH CLASSES OF PRODUCTION BEYOND BREEDER SEED?
☐ FOUNDATION ☐ REGISTERED ☐ CERTIFIED

18. DID THE APPLICANT(S) PREVIOUSLY FILE FOR PROTECTION OF THE VARIETY IN THE U.S.?
☐ YES *(If "YES," through* ☐ Plant Variety Protection Act ☐ Patent Act. Give date: _____.)
☒ NO

19. HAS THE VARIETY BEEN RELEASED, USED, OFFERED FOR SALE, OR MARKETED IN THE U.S. OR OTHER COUNTRIES?
☐ YES (If "YES," give names of countries and dates)
☒ NO

20. The applicant(s) declare(s) that a viable sample of basic seeds of this variety will be furnished with the application and will be replenished upon request in accordance with such regulations as may be applicable.

The undersigned applicant(s) is (are) the owner(s) of this sexually reproduced novel plant variety, and believe(s) that the variety is distinct, uniform, and stable as required in section 41, and is entitled to protection under the provisions of section 42 of the Plant Variety Protection Act.

Applicant(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.

SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE
Robert W. Romig	Vice President Research	July 24, 1989
SIGNATURE OF APPLICANT *(Owner(s))*	CAPACITY OR TITLE	DATE

EXHIBIT A

ORIGIN AND BREEDING HISTORY OF THE VARIETY

Crockett is a synthetic variety made by mixing equal parts of three Northrup King experimental lines to produce breeder seed (Syn 1 generation) of the variety. We planted the mixture in an isolated field near Woodland, California in the spring of 1984. We used honey bees for pollinators and the resulting breeder's seed was harvested in bulk in October and designated as experimental 84634. Following harvest, the field was plowed to destroy the alfalfa since sufficient breeder seed was produced to last the life of the variety. Breeder's seed is maintained by Northrup King Company under controlled storage conditions.

We developed the three parental lines, 83582, 83583, and 83588 during the period 1979-1981 by using multiple cycles of phenotypic recurrent selection for a combination of resistance to spotted alfalfa aphid (Theroaphis maculata), anthracnose (Colletotrichum trifolii) and Phytophthora root rot (Phytophthora megasperma).

Line 83582 was developed by selecting for resistance to spotted alfalfa aphid and Phytophthora root rot within the cultivar, Thor. In 1982 we conducted a final cycle of selection based on progeny performance in field trials at Woodland, California and Washington, Iowa. We produced Syn 1 seed in the greenhouse at Woodland by randomly intercrossing through hand pollination 10 plants from each of the 16 selected lines. The resulting seed was harvested in bulk and used to produce Syn 2 seed in the field in 1983. The Syn 2 was designated 83582.

We developed 83583 by selecting within crosses of Thor x Raidor for resistance to Phytophthora root rot, spotted alfalfa aphid and anthracnose under greenhouse and field conditions. The final 300 parent plants were selected in 1982 for resistance to spotted alfalfa aphid and Phytophthora root rot and randomly intermated in 1983 in the field using honey bees as pollinators. Resulting seed was harvested in bulk and designated 83583.

The parents for 83588 were selected from Thor germplasm in 1982 for resistance to anthracnose (50 plants), Phytophthora root rot (50 plants), and spotted alfalfa aphid (75 plants). Seed was produced on these three subpopulations in the greenhouse in 1982-83 using hand pollinations made at random. In 1983, we bulked 50 grams of seed from each of the three populations and planted this bulk in an isolated field seed increase, using honey bees as pollinators. Resulting seed was harvested in bulk and designated 83588.

From 1984 through 1988, experimental 84634 was extensively tested in University and Northrup King performance trials.

No variants exist beyond limits defined under Exhibit C. Crockett is stable for all essential and distinguishing characters during normal seed multiplication. It is as uniform as other alfalfa cultivars presently accepted by state seed certifying programs and was approved as eligible for certification by the National Alfalfa Variety Review Board in January, 1989.

EXHIBIT B

NOVELTY STATEMENT

Crockett is most similar to DuPuits alfalfa but differs from DuPuits in its reaction to anthracnose, bacterial wilt, Fusarium wilt, Phytophthora root rot and spotted alfalfa aphid. Crockett is resistant to these pests and DuPuits is susceptible.

FORM APPROVED: OMB NO. 0581-0055

EXHIBIT C
(Alfalfa)

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL MARKETING SERVICE
LIVESTOCK, MEAT, GRAIN & SEED DIVISION
PLANT VARIETY PROTECTION OFFICE
BELTSVILLE, MARYLAND 20705

OBJECTIVE DESCRIPTION OF VARIETY
ALFALFA *(Medicago sativa* sensu Gunn et al.*)*

NAME OF APPLICANT(S)	TEMPORARY DESIGNATION	VARIETY NAME
Northrup King Co.	84634	Crockett

ADDRESS *(Street and No., or R.F.D. No., City, State, and Zip Code)*
7500 Olson Memorial Highway-P.O. Box 959
Golden Valley, MN 55440

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PVPO NUMBER
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PLEASE READ ALL INSTRUCTIONS CAREFULLY: Place numbers in the boxes to designate the expressions which are characteristic of the commerical generations of the application variety. Data for quantitative plant characters should be based on a minimum of 100 plants. Include leading zeros when necessary (e.g., [0][8][9]) for quantitative data. Comparative data should be determined from varieties entered in the same trial. Plant color may be precisely designated by using any recognized color chart, e.g., The Munsell Plant Tissue Color Charts.

1. WINTERHARDINESS:

[5] CLASS:
1 = Very Non-Winterhardy (CUF 101)
2 = Non-Winterhardy (Moapa 69)
3 = Intermediately Non-Winterhardy (Mesilla)
4 = Semi-Winterhardy (Lahontan)
5 = (Du Puits)
6 = Moderately Winterhardy (Saranac)
7 = (Ranger)
8 = Winterhardy (Vernal)
9 = Extremely Winterhardy (Norseman)

TEST LOCATION: _____

2. FALL DORMANCY:

FALL DORMANCY (DETERMINED FROM SPACED PLANTINGS)

TESTING INSTITUTION AND LOCATION	DATE OF LAST CUT	DATE REGROWTH SCORED	REGROWTH SCORE OR AVERAGE HEIGHT				LSD .05
			APPLICATION VARIETY	CHECK VARIETIES*			
				Washoe	Vernal		
Othello, WA	9/4	10/17	24.13	22.86	10.16		3.68

* CUF 101, Moapa 69, Mesilla, Lahontan, Du Puits, Saranac, Ranger, Vernal, or Norseman as appropriate.

Specify scoring system used: Height in centimeters

[1] Fall Growth Habit (Determined from Fall Dormancy Trials)
1 = Erect (CUF 101)
3 = Semierect (Mesilla)
5 = Intermediate (Saranac)
7 = Semidecumbent (Vernal)
9 = Decumbent (Norseman)

3. RECOVERY AFTER FIRST SPRING CUT (In Southwest, first cut after March 21):

[3]
1 = Very Fast (CUF 101)
3 = Fast (Saranac)
5 = Intermediate (Ranger)
7 = Slow (Vernal)
9 = Very Slow (Norseman)

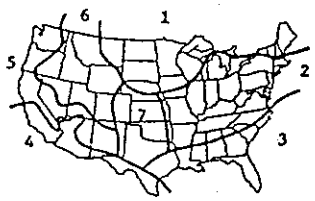
TEST LOCATION: Stanton, MN

4. AREAS OF ADAPTATION IN U.S. (Where tested and proven adapted):

[2] Primary Area of Adaptation

[7] [ ] Other Areas of Adaptation

1 = North Central
2 = East Central
3 = Southeast
4 = Southwest
5 = Moderately Winterhardy Intermountain
6 = Winterhardy Intermountain
7 = Great Plains
8 = Other *(Specify)* _____



5. FLOWERING DATE (When 10% of plants possess open flowers at time of first spring cut):

[ ][ ] Days Earlier Than . . . . . [ ]
Same As . . . . . [ ]
[ ][ ] Days Later Than . . . . . [ ]

NO DATA - Will be available 11/1/89

1 = CUF 101
2 = Mesilla
3 = Saranac
4 = Vernal
5 = Norseman

TEST LOCATION: _____

5

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6. PLANT COLOR (Determined from healthy regrowth 3 weeks after first spring cut, controlling leafhoppers if necessary): NO DATA - will be available 11/1/89

[ ] 1 = Very Dark Green (524) 2 = Dark Green (Vernal) 3 = Light Green (Ranger)

COLOR CHART VALUE *(Specify chart used;* _____ *):*

APPLICATION VARIETY: _____

VERNAL: _____

TEST LOCATION: _____

7. CROWN TYPE (Determined from spaced plantings):

[2] Noncreeping Types: 1 = Broad (Vernal) 2 = Intermediate (Saranac) 3 = Narrow (CUF 101)

Creeping Types: 4 = Creeping Rooted (Rangelander) 5 = Rhizomatous (Rhizoma)

8. FLOWER COLOR (Determine frequency of plants for each color class as defined by USDA Agricultural Handbook No. 424 (Barnes 1972), allowing all plants in plot to flower):

[1 0 0] % Purple and Violet (Subclasses 1.1 to 1.4)

[ ] % Variegated Other Than Blue (Subclasses 2.1, 2.2, 2.5 to 2.9)

[ ] % Cream (Class 3)

[ ] % Blue (Subclasses 2.3 and 2.4)

[ ] % Yellow (Subclasses 4.1 to 4.4)

[ ] % White (Class 5)

TEST LOCATION: Stanton, MN

9. POD SHAPE (Determine frequency of plants with the following pod shapes produced on well cross-pollinated racemes): NO DATA - will be available 11/1/89

[ ] % Tightly Coiled (One or more coils, center more or less closed)

[ ] % Loosely Coiled (One or more coils, center conspicuously open)

[ ] % Sickle (Less than 1 coil)

TEST LOCATION: _____

10. PEST RESISTANCE: Provide in the appropriate column, trial data for application variety, and resistant (R) and susceptible (S) check varieties, synthetic generation tested, average severity index scores (ASI), least significant difference statistics (LSD .05), the institution in charge of test, year, and location of test, and whether test is a field or laboratory evaluation. Describe scoring system, and any test procedure which differs from standard methods proposed by Elgin (1982). Trial data from other test years or locations should be presented whenever available on a separate document as Exhibit D.
Seeds of the check varieties and germplasm lines listed below can be obtained from the USDA Field Crops Laboratory, Bldg. 001, Rm. 335, BARC-West, Beltsville, MD 20705. Although comparisons with check varieties listed below are preferred, comparisons with any appropriate check variety recommended by Elgin (1982) may be presented.

A. DISEASE RESISTANCE: DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	% Resistant XXX LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Anthracnose, Race 1 *(Colletotrichum trifolii)*	Application	1	49	120		8.8	Northrup King Co. 1985 Stanton, MN Greenhouse
	XXXX Saranac AR		50	120			
	Saranac (S)		5	120			
	SCORING SYSTEM: Seedling survival following inoculation considered resistant.						
Anthracnose, Race 2 *(Collectotrichum trifolii)*	Application						
	Saranac AR (R)						
	Arc (S)						
	SCORING SYSTEM:						
Bacterial Wilt *(Corynebacterium insidiosum)*	Application	1	39	> 100	2.15	LSD ASI .05 .39	University of Minnesota - Rosemount 1985 Field
	Vernal (R)		32	> 100	2.28		
	Narragansett (S)		4	> 100	3.69		
	SCORING SYSTEM: Plants scored 0 or 1 on scale of 1-5 considered resistant.						
Common Leafspot *(Pseudopeziza medicaginis)*	Application						
	MSA-CW3AN3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						

10. A. PEST RESISTANCE (Continued):

DISEASE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Downy Mildew *(Peronospora trifoliorum)*	Application						
Isolate, if known:	Saranac (R)						
	Kanza (S)						
	SCORING SYSTEM:						
Fusarium Wilt *(Fusarium oxysporum f. medicaginis)*	Application	1	29	>100	3.33	.51	Univ. of Minnesota 1985 Rosemount, MN Field
	~~XXXXXXX~~ Agate (R)		64	>100	2.11		
	Narragansett (R)		23	>100	3.92		
	SCORING SYSTEM: Plants scored 0 or 1 on scale of 0-5 considered resistant.						
Phytophthora Root Rot *(Phytophthora megasperma f. medicaginis)*	Application	1	58	>100	2.63	.78	Northrup King Co. Stanton, MN 1985 Field
	Agate (R)		59	>100	2.67		
	~~XXXXXX~~ Thor(S)		20	>100	4.09		
	SCORING SYSTEM: Plants scored 1 or 2 on scale of 1-6 considered resistant.						
Verticillium Wilt *(Verticillium albo-atrum)*	Application	1	8	>100	--	LSD .05 on % of resistant Plants 6.4	Northrup King Co. Stanton, MN 1985 Greenhouse
	~~XXXXXX~~ WL-316(R)		29	>100	--		
	Saranac (S)		1	>100	--		
	SCORING SYSTEM:						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

B. INSECT RESISTANCE:

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT DEFOLIATION	DEFOLIATION IN PERCENT OF RESISTANT CHECK	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Alfalfa Weevil *(Hypera postica)*	Application						
	Arc (R)			100			
	Saranac (S)						
	SCORING SYSTEM:						

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10. B. INSECT RESISTANCE (Continued):

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT SEEDLING SURVIVAL	NUMBER OF SEEDLINGS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Blue Alfalfa Aphid *(Acyrthosiphon kondoi)*	Application						
	CUF 101 (R)						
	PA-1 (S)						
	SCORING SYSTEM:						
Pea Aphid *(Acyrthosiphon pisum)*	Application						
	Kanza (R)						
	Ranger (S)						
	SCORING SYSTEM:						
Spotted Alfalfa Aphid *(Therioaphis maculata)*	Application	1	32	>100	4.3	.41	Northrup King Co. 1985 Woodland, CA Greenhouse
Biotype, if known:	Kanza (R)		33	>100	4.3		
	Ranger (S)		1	>100	5.9		
	SCORING SYSTEM: Plants scored 1 or 2 on scale of 1-6 considered resistant.						

INSECT	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Potato Leafhopper Yellowing *(Empoasca fabae)*	Application						
	MSA-CW3An3 (R)						
	Ranger (S)						
	SCORING SYSTEM:						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

C. NEMATODE RESISTANCE: NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Northern Root Knot *(Meloidogyne hapla)*	Application						
	Nev. Syn. XX (R)						
	Lahontan (S)						
	SCORING SYSTEM:						

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10. C. NEMATODE RESISTANCE (Continued):

NEMATODE	VARIETY	SYN. GEN. TESTED	PERCENT RESISTANT PLANTS	NUMBER OF PLANTS TESTED	ASI	ASI LSD .05	INSTITUTION, YEAR, LOCATION, FIELD OR LABORATORY
Southern Root Knot *(Meloidogyne incognita)*	Application						
	Moapa 69 (R)						
	Lahontan (S)						
	SCORING SYSTEM:						
Stem Nematode *(Ditylenchus dipsaci)*	Application	1	37	>100	2.8		Northrup King Co. Stanton, MN 1986 Laboratory
	~~Lahontan (S)~~ Vernema (HR)		48	>100	2.6	.40	
	Ranger (S)		25	>100	3.1		
	SCORING SYSTEM: Plants scored 1 or 2 on scale of 1-5 considered resistant.						
Other *(Specify)*	Application						
	(R)						
	(S)						
	SCORING SYSTEM:						

11. INDICATE THE VARIETY THAT MOST CLOSELY RESEMBLES THE APPLICATION VARIETY FOR EACH OF THE FOLLOWING CHARACTERS:

CHARACTER	VARIETY	CHARACTER	VARIETY
Winterhardiness	Washoe	Plant Color	Saranac
Recovery After 1st Cut	WL-320	Crown Type	Washoe
Area of Adaptation	Shenandoah	Combined Disease Resistance	WL-320
Flowering Date		Combined Insect Resistance	

REFERENCES

Barnes, D.K. 1972. A System for Visually Classifying Alfalfa Flower Color. U.S. Dep. Agric. Handb. 424. 18 pp. (Note: Greenish cast of plate 6, A and B is an artifact of printing, actual colors a blend of yellow and white.)

Elgin, J.H., Jr., (ed.). 1982. Standard Tests to Characterize Pest Resistance in Alfalfa Cultivars. U.S. Dep. Agric. Tech. Bull. (In Press).

Gunn, C.R., W.H. Skrdla, and H.C. Spencer. 1978. Classification of Medicago sativa L. using legume characters and flower colors. U.S. Dep. Agric. Tech. Bull. 1574. 84 pp.

Munsell Color Co. 1977. Munsell Plant Tissue Color Charts. Munsell Color Co., Inc. Baltimore.

NOTE: Any additional descriptive information and supporting documentation may be provided as Exhibit D.

EXHIBIT E

Statement of the Basis of Applicant's Ownership

Alfalfa cultivar Crockett was developed by the Northrup King Co. alfalfa breeding staff from germplasm sources cited in Exhibit A of the application. Northrup King believes that the cultivar is novel as defined in the Plant Variety Protection Act, and therefore, that Northrup King Co. is the sole owner of it.